

ABSTRACT

Disclosed are apparatus and methods of chemical mechanical polishing a semiconductor wafer to minimize formation of scratches on a surface of a wafer. According to one example, a method of planarizing a pattern of a wafer by rotating the wafer that is fixed to a carrier head, on a polishing pad by pressing the wafer against the polishing pad and injecting slurry onto the polishing pad is disclosed. The method may include performing a first planarization process by injecting the slurry onto the polishing pad and rotating the wafer as the wafer contacts the polishing pad and performing a second planarization process during which the wafer is spaced apart from the polishing pad at a given spacing, wherein air is injected into the polishing pad to produce bubbles in the slurry on the polishing pad while the wafer is rotated.